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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,589	02/12/2001	Luis Rafael Herrera Estrella	408.0003	5829

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William J. Bundren
734 Larue Road
Millersville, MD 21108

EXAMINER	
LU, FRANK WEI MIN	
ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/701,589	HERRERA ESTRELLA, LUIS RAFAEL	
	Examiner	Art Unit	
	Frank W Lu	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2005* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,17,27,32,47 and 57* is/are pending in the application.

4a) Of the above claim(s) *47 and 57* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,17,27 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

CONTINUED EXAMINATION UNDER 37 CFR 1.114 AFTER FINAL REJECTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission of RCE filed on September 9, 2005 and the response to non-compliant amendment filed on October 7, 2005 have been entered. The claims pending in this application are claims 1, 17, 27, 32, 47, and 57 wherein claims 47 and 57 have been withdrawn due to species election. Rejection and/or objection not reiterated from the previous office action are hereby withdrawn in view of amendments filed on October 7, 2005. Claims 1, 17, 27, and 32 will be examined.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Written Description

Claims 1, 17, 27, and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is referred to the interim guidelines on written description published on December 21, 1999 in the Federal Register at Volume 64, Number 244, pp.71427-71440.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111 (Fed. Cir. 1991), clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." *Vas-Cath Inc. v. Mahurkar*, 19USPQ2d at 1117. The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed.". *Vas-Cath Inc. v. Mahurkar*, 19USPQ2d at 1116.

The specification (pages 21-27) provides adequate written descriptions for transgenic tobaccos having an increased capacity to synthesize, to accumulate and to exude citrate. However, the specification fails to adequately describe any kind of transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid as recited in claims 1, 17, 27, and 32. The claimed invention as a whole is not adequately described if the claims require essential or critical elements which are not adequately described in the specification and which are not conventional in the art as of Applicants effective filing date. Possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with sufficient relevant identifying characteristics (as it relates to the claimed invention as a whole) such that a person skilled in the

art would recognize that the inventor had possession of the claimed invention. *Pfaff v. Wells, Electronics, Inc.*, 48 USPQ2d 1641, 1646 (1998).

In this instant case, although the specification adequately transgenic tobaccos having an increased capacity to synthesize, to accumulate and to exude citrate (see the specification, pages 21-27), the specification fails to adequately describe any kind of transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid as recited in claims 1, 17, 27, and 32. The transgenic plants recited in claim 1 is read as any kind of transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid. Since the transgenic plants recited in claim 1 is made using a vector having a chimeric gene comprising 35S promoter of the cauliflower mosaic virus, a citrate synthase gene, and a transcription termination/polyadenylation sequence functional in plants and has no ability to produce any kind of organic acid, it is unclear how the transgenic plants recited in claim 1 can have an increased capacity to synthesize, to accumulate and to exude any kind of organic acid. Therefore, the general knowledge and level of skill in the art do not supplement the omitted description because specific, not general, guidance is what is needed.

With limited disclosure provided by the specification, the skilled artisan cannot envision all above possible transgenic plants and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method used. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of identifying it. See *Fiers v. Revel,* 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co.* Ltd., 18 USPQ2d 1016 (Fed. Cir. 1991).

One cannot describe what e has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481, 1483. In Fiddes, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

4. Scope of Enablement

Claims 1, 17, 27, and 32 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for producing transgenic plants having an increased capacity to synthesize, to accumulate and to exude citrate, does not reasonably provide enablement for producing transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

In *In re Wands*, 858 F.2d 731,737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) the court considered the issue of enablement in molecular biology. The Court summarized eight factors to be considered in a determination of "undue experimentation". These factors include: (a) the quantity of experimentation necessary; (b) the amount of direction or guidance presented; (c) the presence or absence of working examples; (d) the nature of the invention; (e) the state of the prior art; (f) the relative skill of those in the art; (g) the predictability of the art; and (h) the breadth of the claims. The Court also stated that although the level of skill in molecular biology is high, results of experiments in molecular biology are unpredictable.

To begin, there is no direction or guidance in the specification to produce transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid using the method recited in claim 1. While the relative skill in the art is very high (the Ph.D. degree with laboratory experience), there is no predictability whether transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid can be produced using the method recited in claim 1.

Claim 1 is directly to a method for obtaining transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid. Since the transgenic plants recited in claim 1 is made using a vector having a chimeric gene comprising 35S promoter of the cauliflower mosaic virus, a citrate synthase gene, and a transcription termination/ polyadenylation sequence functional in plants and has no ability to produce any kind of organic acid, it is impossible that the method recited in claim 1 can produce transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid.

With above unpredictable factor, the skilled artisan will have no way to predict the experimental results. Accordingly, it is concluded that undue experimentation is required to make the invention as it is claimed. The undue experimentation at least includes to test whether the method recited in claim 1 can be used to transgenic plants having an increased capacity to synthesize, to accumulate and to exude any kind of organic acid.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 17, 27, and 32 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 1 is rejected as vague and indefinite. Although claim 1 is directed to a method obtaining transgenic plants having an increased capacity to synthesize, to accumulate and to exude organic acids, transgenic plants in step c) of the claim does not require to have an increased capacity to synthesize, to accumulate and to exude organic acids. Therefore, the goal of the claim cannot be reached. Please clarify.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (f) he did not himself invent the subject matter sought to be patented.

9. Claims 1, 27, and 32 are rejected under 35 U.S.C. 102(a) as being anticipated by De La Fuente *et al.,* (Science, 276, 1566-1568, June 6, 1997).

Regarding claim 1, De La Fuente *et al.,* disclose preparing a recombinant heterologous DNA molecule encoding one or more genes for enzymes that synthesize organic acids (ie., *Pseudomonas aeruginosa* citrate synthase gene), linked to a promoter sequence functional in plants (ie., 35S promoter of the cauliflower mosaic virus), and to a transcription

termination/polyadenylation sequence functional in plants (ie., nos 3'-end sequence containing nopaline synthetase polyadenylation region), wherein the recombinant DNA molecule comprises a gene that codes for an enzyme selected from the group consisting of citrate synthase and a gene of *Pseudomonas aeruginosa* that codes for citrate synthase, transforming plant cells with the recombinant DNA molecule (ie., a vector having a chimeric gene comprising 35S promoter of the cauliflower mosaic virus, *Pseudomonas aeruginosa* citrate synthase gene, and nos 3'-end sequence containing nopaline synthetase polyadenylation region), regenerating transgenic plants starting from transformed cells, or of seeds from plants obtained from these transformed cells, for one or several generations, wherein the genetic information of these transformed cells includes the recombinant DNA molecule coding for enzymes that synthesize organic acids as recited in claim 1 (see page 1566, right column, page 1567, left column, page 1567, left column and Figure 3).

Regarding claim 27, De La Fuente *et al.,* teach that the promoter is a constitutive promoter (see page 1566, right column).

Regarding claim 32, De La Fuente *et al.,* teach that the promoter is a root-specific promoter (see page 1567, left column).

Therefore, De La Fuente *et al.,* teach all limitations recited in claims 1, 27, and 32.

10. Claims 1, 27, and 32 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

The above paper was published on June 6, 1997 and taught all limitations recited in claims 1, 27, and 32 (see above). However, Verenice Ramírez-Rodríguez, José Luis Cabrera-

Ponce, and Luis Herrera-Estrella who are coauthors of this paper are not listed in this instant application. It is unclear why these coauthors are not inventors of this instant application. Please give explanation.

11. Claims 1 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Landschutze *et al.,* (The EMBO Journal, 14, 660-666, 1995).

Regarding claim 1, since transgenic plants in step c) of the claim does not require to have an increased capacity to synthesize, to accumulate and to exude organic acids, Landschutze *et al.,* teach preparing a recombinant heterologous DNA molecule encoding one or more genes for enzymes that synthesize organic acids (ie., potato citrate synthase cDNA in antisense orientation), linked to a promoter sequence functional in plants (ie., 35S promoter of the cauliflower mosaic virus), and to a transcription termination/ polyadenylation sequence functional in plants (ie., polyadenylation signal region of the T-DNA octopine synthase gene), wherein the recombinant DNA molecule comprises a gene that codes for an enzyme selected from the group consisting of citrate synthase and a gene of *Pseudomonas aeruginosa* that codes for citrate synthase, transforming plant cells with the recombinant DNA molecule (ie., a vector having a chimeric gene comprising 35S promoter of the cauliflower mosaic virus, potato citrate synthase cDNA in antisense orientation and polyadenylation signal region of the T-DNA octopine synthase gene), and regenerating transgenic plants starting from transformed cells, or of seeds from plants obtained from these transformed cells, for one or several generations, wherein the genetic information of these transformed cells includes the recombinant DNA molecule

coding for enzymes that synthesize organic acids as recited in claim 1 (see page 660, right column, page 665, left column, and Figures 1 and 2).

Regarding claim 27, Landschutze *et al.,* teach that the promoter is a constitutive promoter (see page 327, left column, last paragraph).

Therefore, Landschutze *et al.,* teach all limitations recited in claims 1 and 27.

12. Claim 32 is rejected under 35 U.S.C. 102(b) as being anticipated by Landschutze *et al.,* as applied to claims 1 and 27 above as evidence by Gallardo *et al.,* (Planta, 197, 324-332, 1995).

Regarding claim 32, since the promoter used by Landschutze *et al.,* is 35S promoter of the cauliflower mosaic virus (see page 665, left column) and Gallardo *et al.,* teach that 35S promoter of the cauliflower mosaic virus is a root-specific promoter (see page 324, abstract and page 329, right column, last paragraph), Landschutze *et al.,* as evidence by Gallardo *et al.,* teach all limitations of claim 32.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over De La Fuente *et al.,* as applied to claims 1, 27, and 32 above or Landschutze *et al.,* as applied to claims 1 and 27 and further in view of Christou *et al.,* (US Patent No. 5,015,580, published on May 14, 1991).

The teachings of De La Fuente *et al.*, and Landschutze *et al.*, have been summarized previously, supra.

De La Fuente *et al.*, and Landschutze *et al.*, do not disclose that the transcription termination sequence is the transcription termination sequence of the nopaline synthetase gene as recited in claim 17.

Christou *et al.*, teach that a vector containing a chimeric gene for suitable for expression in plants generally must include, besides the coding sequence of the desired exogenous or foreign gene, appropriate flanking regulatory sequences such as a suitable promoter capable of promoting transcription and expression in vivo in plant cells, a transcription terminator capable of signalling the end of transcription, and a translation terminator suitable to terminate translation of messenger if protein synthesis is desired. A suitable termination sequence effective in plants is the polyadenylation sequence from the nopaline synthase gene of *Agrobacterium tumefaciens* (see column 11, second paragraph).

Therefore, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have performed the methods recited in claim 17 wherein the transcription termination sequence is the transcription termination sequence of the nopaline synthetase gene in view of prior art of De La Fuente *et al.*, or Landschutze *et al.*, and Christou *et al.*. One having ordinary skill in the art would have been motivated to do so because Christou *et al.*, suggest that a suitable termination sequence effective in plants that contains in a vector containing a chimeric gene is the polyadenylation sequence from the nopaline synthase gene (see column 11, second paragraph). One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to use the transcription termination

sequence of the nopaline synthetase gene as the transcription termination sequence in a recombinant heterologous DNA molecule recited in claim 17 because constructing a recombinant heterologous DNA molecule recited in claim 17 by cloning a fragment containing both the transcription termination sequence and the polyadenylation sequence from the nopaline synthase gene would save time and cost for one having ordinary skill in the art since the transcription termination sequence and the polyadenylation sequence of the nopaline synthase gene are adjacent each other and a restriction fragment containing the transcription termination sequence and the polyadenylation sequence from the nopaline synthase gene is easy to obtain.

Conclusion

15. No claim is allowed.

16. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is (571)273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (571)272-0746. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (571)272-0745.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Frank Lu
Primary Examiner
December 22, 2005